12. (Currently Amended) An apparatus according to claim ~~1~~ 40, wherein said detection coil is a magnetometer coil connected to a SQUID sensor.

13. (Currently Amended) An apparatus according to claim ~~1~~ 40, wherein said detection coil is a first derivative gradiometer.

14. (Currently Amended) An apparatus according to claim ~~1~~ 40, wherein said detection coil is an asymmetric gradiometer.

15. (Currently Amended) An apparatus according to claim ~~1~~ 40, wherein said detection coil is an apodized magnetometer coilgradiometer.

16. (Currently Amended) An apparatus according to claim ~~1~~ 40, wherein said detection coil is a vector magnetometer.

17. (Currently Amended) An apparatus according to claim ~~1~~ 40, wherein said detection coil is a gradiometer.

18. (Currently Amended) An apparatus according to claim ~~1~~ 40, wherein said detection coil is a fractional turn SQUID magnetometer.

19. (Cancelled) A method of high resolution imaging of a sample, comprising:

sensing magnetic flux from the sample using a SQUID evacuated dewar and a SQUID sensor having a detection coil;

mounting the SQUID sensor within the dewar remotely of the detection coil;

mounting the detection coil at the distal end of a cold finger in close proximity to a thin window forming a part of the dewar;

mounting a radiation shield having an extension within the dewar and surrounding the detection coil; and,

using the extension to prevent or reduce circular currents in the plane of the detection coil via the extension.

20. (Currently Amended) A method according to claim ~~19~~ 41, further including replacing the detection coil with another detection coil.

21. (Currently Amended) A method according to claim ~~19~~ 41, further including applying a magnetic field to the sample being imaged prior to or during said sensing.

22. (Currently Amended) An apparatus according to claim ~~1~~ 40, wherein the extension includes at least one longitudinally extending slot.

23. (Previously Presented) An apparatus according to claim 22, wherein

the extension being generally conical in shape; and

the upper portion of the extension being larger than the lower portion of the extension.

24. (Currently Amended) An apparatus according to claim ~~1~~ 40, wherein the extension is composed of aluminum.

25. (Currently Amended) An apparatus according to claim ~~1~~ 40, wherein the extension is composed of coli foil.

26. (Currently Amended) An apparatus according to claim ~~1~~ 40, wherein the extension is composed of G-10 fiber composite for reducing circular currents in the plane of the detection coil.

27. (Currently Amended) An apparatus according to claim ~~1~~ 40, further including a cold finger reservoir and a radiation shield reservoir.

28. (Previously Presented) An apparatus according to claim 27, wherein the cold finger reservoir contains liquid helium.

29. (Previously Presented) An apparatus according to claim 27, wherein the radiation shield reservoir contains liquid nitrogen.

30. (Previously Presented) An apparatus according to claim 27, wherein the radiation shield surrounds the cold finger reservoir and the radiation shield reservoir.

31. (Previously Presented) An apparatus according to claim 27, wherein the radiation shield reservoir is disposed above the cold finger reservoir.

32. (Cancelled) An apparatus according to claim 1, further including a bobbin having a tip; and a material disposed on the bobbin tip for cooling the pickup coil below the transition temperature.

33. (Currently Amended) An apparatus according to claim ~~32~~ 40, wherein the material is aluminum Mylar.

34. (Cancelled) An apparatus for high resolution imaging of a sample, comprising

a SQUID evacuated dewar;

38. (Cancelled) A method according to claim 19, further including cooling the cold finger via a first reservoir at one temperature and cooling the radiation shield via a second reservoir at a substantially higher temperature.

39. (Cancelled) A method of high resolution imaging of a sample, comprising

sensing magnetic flux from the sample using a SQUID evacuated dewar and a SQUID sensor having a detection coil electrically coupled thereto;

mounting the SQUID sensor within the dewar;

mounting the detection coil at the end of a cold finger in close proximity to a thin window forming a part of the dewar;

mounting a radiation shield within the dewar and extending to the detection coil;

cooling the cold finger to a first temperature; and

cooling the radiation shield to a second temperature; and

wherein the first temperature is lower than the second temperature.

40. (New) An apparatus for high resolution imaging of a sample, comprising:

a SQUID evacuated dewar;

a SQUID sensor cooperating with the dewar to sense magnetic flux from the sample being imaged, the sensor having a detection coil;

a cold finger;

the dewar having a thin window;

means for mounting the sensor remotely from the coil;

the detection coil being electrically connected to the SQUID sensor;

a mechanism for mounting the detection coil at the distal end of the cold finger in close proximity to the thin window, the mechanism including a bobbin having a tip;

a material disposed on the bobbin tip for cooling the detection coil below the transition temperature

a radiation shield mounted within the dewar and having an extension surrounding the detection coil to help maintain its cold temperature; and

wherein the extension prevents or reduces circular currents in the plane of the detection coil.

41. (New) A method of high resolution imaging of a sample, comprising:

sensing magnetic flux from the sample using a SQUID evacuated dewar and a SQUID sensor having a detection coil;

mounting the SQUID sensor within the dewar remotely of the detection coil;

mounting the detection coil on a bobbin having a tip at the distal end of a cold finger in close proximity to a thin window forming a part of the dewar;

placing a material on the bobbin tip for cooling the detection coil below the transition temperature;

mounting a radiation shield having an extension within the dewar and surrounding the detection coil; and

using the extension to prevent or reduce circular currents in the plane of the detection coil via the extension.

42. (New) A method according to claim 41, wherein the material is aluminum Mylar.